

**Before Independent Hearings Commissioners Appointed by Canterbury  
Regional Council and Selwyn District Council**

**In the matter of**            The Resource Management Act 1991

**And**

**In the matter of**            Applications by **Fulton Hogan Limited** for all  
resource consents necessary to establish, operate,  
maintain and close an aggregate quarry (**Roydon  
Quarry**) between Curraghs, Dawsons, Maddisons  
and Jones Roads, Templeton

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**SUMMARY STATEMENT OF ERIC ROLAND VAN NIEUWKERK  
ON BEHALF OF FULTON HOGAN LIMITED**

**WATER QUALITY AND WATER USE**

**DATED: 13 NOVEMBER 2019**

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## **Introduction**

1. My name is Eric Roland Van Nieuwkerk. I hold the position of Senior Hydrogeologist at Golder Associates (NZ) Limited. I here summarise key points of my evidence, highlighting areas of agreement and disagreement between my opinion and that expressed by or on behalf of submitters and in the s42A report.
2. I have been asked by Fulton Hogan Limited (**Fulton Hogan**) to provide evidence in respect of its application for resource consents to establish, operate, maintain and close the proposed Roydon Quarry (**Proposal**).
3. The focus of my evidence is on the potential effects the proposed Roydon quarry activities may have on the groundwater resource, and how any effects might be best avoided, remedied or mitigated.

## **Key Matters**

### ***Proposal***

4. The proposed Roydon quarry, located approximately 700 metres (m) to the west of the township of Templeton, will involve extraction of aggregate material and rehabilitation of excavated parts of the site with cleanfill, overburden and topsoil material. Various facilities, access roads, bunding and screen planting will be established on the site. Dust suppression will be applied to control dust.
5. The applicant intends to use the on-site water supply well M36/0257 for water supply needed for quarry operations, which includes dust suppression and irrigation of rehabilitation areas. The applicant holds current resource consent CRC182422 which permits the take and use of groundwater at a max rate of 9.5 L/s, not exceeding a volume of 6,772 m<sup>3</sup> in 9 consecutive days. Restriction apply if groundwater levels in well M36/0217, located at 2.6 km southwest of M36/0257, fall below trigger levels specified in the consent.
6. No maximum annual volume is included as a condition on current consent CRC182422. CRC has asked the applicant to assess what the annual volume would have been for the current use of pasture irrigation for livestock grazing, based on a 'reasonable use test' specified in In Schedule 10 of the LWRP. I assessed a reasonable annual use would have been 170,483 m<sup>3</sup>.

7. I have assessed the applicant's water demand for the proposed activities, based on assumptions for dust suppression presented in Mr Roger Cudmore's evidence and on information on irrigation for rehabilitation provided to me by Mr Victor Mthamo. Based on this assessment, I recommend an annual volume of at least 112,375 m<sup>3</sup> is included in the groundwater use resource consent for Roydon Quarry. Peak demand can be met under the water take limit conditions of consent CRC182422, with provision for storage of at least 2,500 m<sup>3</sup> required to ensure daily water demand is met most of the time, even at times when groundwater take restrictions apply.
8. The applicant is proposing to excavate down to a maximum depth that is 1 m above the Seasonal High Water Table (SHWT) as required under the Canterbury Regional Council's (CRC) Land and Water Regional Plan (LWRP). I have used the groundwater level information from newly installed onsite monitoring wells and historic groundwater level information on CRC's wells database and web-based GIS system, to assess the SHWT at the site and the maximum quarry pit depth:
  - (a) The maximum quarry pit depth would be 42.99 m RL at the northwest corner.
  - (b) The maximum quarry pit depth would be 33.22 m RL at the southeast corner.

***Assessment of effects***

9. The proposed activities can potentially have adverse effects on the groundwater quality beneath and downgradient from the site. In my evidence I have assessed the groundwater quality effects of the following activities:
  - (a) Extraction of gravels.
  - (b) Hazardous substances storage and use.
  - (c) Backfilling with cleanfill.
  - (d) Stormwater discharge to ground.
10. I have also assessed the following effects of the proposed activities on nearby water supply wells:
  - (a) Well interference and groundwater quality effects on nearby wells.

- (b) Groundwater quality effects on downgradient public water supply well M36/7575 owned by Selwyn District Council.
11. Groundwater will be sourced from the existing water supply well M36/0257 on site for quarry processes and will be subject to the same conditions as current groundwater take resource consent CRC182422. No increase in rate of take is sought. As such effects on groundwater from the proposed groundwater take are no more than already permitted by the existing consent CRC182422.
  12. I consider potential risks of adverse effects from the proposed quarry activities on groundwater quality and any downgradient wells to be sufficiently small if the proposed management plans are implemented and proposed conditions are adhered to. Conditions are proposed to identify and remedy those issues, should they occur.

### **Submitter Concerns**

13. I have read relevant briefs of evidence from submitters. In my rebuttal evidence I address the evidence of the following witnesses:
  - (a) Mr Murray England of Selwyn District Council in relation to concerns about drinking water supply well M36/7575 and groundwater monitoring consent conditions groundwater;
  - (b) Ms Jolene Eagar of the Templeton Residence Association in relation to concerns about a possible rise in groundwater levels and whether maintaining a separation distance between the quarry floor and the seasonal high water table of 1 m is sufficient.
  - (c) Mr Martin Flanagan in relation to the same matter as Ms Eagar.
14. No groundwater flow pathways from the site to the deeper aquifers are likely to exist and no discharges to groundwater from the site will be transported to community drinking supply well M36/7575. As such, I do not anticipate any adverse groundwater quality effects on this well from the quarry activities.
15. I acknowledge there is an uncertainty about the future groundwater levels at the site. I therefore consider it appropriate to review the maximum quarry depth level every 5 years. However, I consider that including an additional separation distance between quarry pit floor and the SHWT would not be

necessary to reduce the risks to the groundwater quality beneath or downgradient of the site.

### **Points of Difference with S42a Reports and Expert Witness Conferencing**

16. From the S42a officer's reports and conferencing with expert witnesses I derive the following key points of difference:
  - (a) Dr Lisa Scott notes in paragraph 1 of her S42a officer's report that excavation and filling of Roydon Quarry is likely to cause localised changes to the aesthetic quality of groundwater below the site and immediately downgradient. However, I consider it unlikely that there would be a change in groundwater quality downgradient from the site, and if there would be a change, it would be small and localised.
  - (b) Mr David Just considers I have incorrectly assessed the annual volume for current groundwater take and use associated with applicant's current consent CRC182422.
17. I consider that the amended proposed conditions are sufficient to minimise the risks of adverse water quality effects on downgradient water supply wells, and that if issues arise, these would be identified by the proposed ongoing groundwater quality monitoring. These conditions should also reference mitigation should downgradient wells be adversely affected.
18. Based on conferencing with Ms Scott, Mr Mthamo, Mr Nick Eldred and myself, it is my understanding that all these experts are in general agreement that the amended proposed conditions would sufficiently reduce the risks to downgradient water supply wells and provide for appropriate mitigation. I refer to the Joint Witness Statement from 6 November 2019 on this matter.
19. Mr Just considers that an annual volume of 96,489 m<sup>3</sup> would be derived if Method 3 of Schedule 10 in the LWRP would be used. However, Mr Just assess an annual volume of **119,920 m<sup>3</sup>** with Method 2 of Schedule 10 in the LWRP, and considers this can reasonably be taken for irrigation under CRC182422. Because the quarry's annual water requirements have been assessed to be 112,375 m<sup>3</sup>, which is less than the **119,920 m<sup>3</sup>**, the difference in opinion as to how Schedule 10 assessments should be applied is therefore immaterial.
20. Based on conferencing with Mr Just, Mr Mthamo and myself, it is my understanding that these experts are in general agreement that if a maximum

volume of 119,920 m<sup>3</sup> was granted, the cumulative effects of this would be within those already able to occur under CRC182422. I refer to the Joint Witness Statement from 12 November 2019 on this matter.

### **Corrections to Evidence in Chief**

21. I propose the following corrections are made to my evidence in chief. I note that these changes are immaterially to the conclusions of my evidence in chief:

- (a) Incorrect figure references are shown throughout the document:
  - (i) Map 1 should be referenced in paragraph 12, 38, 41, and 47. This map is included in the back of the evidence in chief.
  - (ii) Map 5 should be referenced in paragraph 49. This map is included in the back of the evidence in chief. Note that there are no maps 2, 3 or 4.
- (b) Paragraph 13: remove the word 'which' after 'Aggregate processing...'
- (c) Paragraph 14: areas requiring dust suppression are 6 ha (not 9 ha).
- (d) Paragraph 17: remove reference to figure 1.
- (e) Paragraph 38: the elevation should be referenced in m RL (not m above sea level).
- (f) Paragraph 46: this should read seasonal high water table (not level).
- (g) Paragraph 51: the first sentence starting with 'Groundwater quality at the site...' can be removed.
- (h) Paragraph 51 and 54: in the table below these paragraphs the electrical conductivity value listed is in mS/m (not mS/cm).
- (i) Paragraph 52: the first sentence should be corrected as follows:

*All measured analytes are within the Drinking Water Standards for New Zealand 2005 (revised 2018) maximum acceptable and guideline values except for aluminium.*

- (j) Paragraph 52: the last sentence should be corrected as follows:

*Natural silts containing aluminium-rich minerals may be influencing the elevated dissolved aluminium concentrations*

*~~Dissolved Aluminium concentrations have been present in the samples and these samples may not be representative.~~*

(k) Paragraph 58.5: this should be removed. I have not assessed the future land use post-rehabilitation.

(l) Paragraph 84: the last sentence should be corrected as follows:

*If test results show non-compliance with New Zealand drinking standards, and this can clearly be attributed to the quarry operations, the applicant could potentially provide for a water treatment option, an alternative water supply, or install a deeper well for affected parties.*

(m) Paragraph 88: the first part of the first sentence should be corrected as follows:

*~~I have consulted~~ Based on Mr Mthamo's advice, [..]*

(n) Paragraph 94: the first sentence should be corrected as follows:

*I consider that any groundwater quality risks can be minimised through appropriate management: ~~any groundwater quality risks can be minimised:~~*

(o) Paragraph 94.1: the last sentence should be corrected as follows:

*Where the ~~conditions and propose~~ proposed sampling and testing of materials before deposition to be included in the Cleanfill Management Plan, I support these provisions.*

(p) Paragraph 94.2: the last sentence should be corrected as follows:

*Therefore, capturing all stormwater runoff from these surfaces in a stormwater infiltration pond lined with soil material to filter the infiltrating water as described in ~~my~~ Mr Mthamo's evidence, would minimise the risk of groundwater contamination from infiltrating stormwater.*

**Eric van Nieuwkerk**

13 November 2019